

REMARKS

Abstract

To overcome the objection to the Abstract, the original abstract is replaced with a new abstract that omits the word "comprises" and that recites elements of claim 1.

35 USC 112 Rejections

The indefiniteness rejection of claim 9 over the phrase "a thermal drive apparatus configured to thermally drive the solvent vapor from the distillation tank back to the reservoir" is overcome by clarifying that the thermal drive apparatus works "by producing a temperature in the distillation tank that is high enough to evaporate the solvent and a temperature at the reservoir that is low enough to condense the solvent." The apparent rejection of the same phrase in claim 15 is overcome in the same way.

Regarding claim 14, Applicant traverses the indefiniteness rejection of the phrase "both distillation tanks". This phrase is not indefinite, because the previous paragraph discloses that each of the two systems has a distillation tank; therefore, the phrase "both distillation tanks" must refer to both the distillation of the first system and the distillation tank of the second system. This Amendment accordingly replaces the phrase "both distillation tanks" with "both the distillation tank of the first system and the distillation tank of the second system".

The indefiniteness rejection over the phrase "the extracting" in claim 17 is overcome by omitting this phrase altogether.

Regarding claims 9, 14 and 17-19, the Examiner's objection to the phrase "in the form of" is overcome by replacing this phrase with "as".

The objection to the preambles of claims 9, 14 and 17-19 reciting "oil extraction" without balancing it with "distillation" is overcome by deleting "oil extraction" in all these preambles.

Independent Claim 9

The system of claim 9 pumps a solvent in liquid-phase from a reservoir to an extraction tank. The solvent is vaporized in a distillation tank. The system thermally drives the solvent, now in vapor-phase, back to the reservoir, by producing a temperature in the distillation tank that is high enough to evaporate the solvent and a temperature at the reservoir that is low enough to condense the solvent.

A benefit of thermally driving the vapor-phase solvent despite mechanically pumping the liquid-phase solvent is explained in the specification (paragraph [0033] of the published application) as follows:

"During the extraction/recovery step, the solvent is not compressed. Any mechanical pumping of the solvent is done only where, on the line 16, the solvent is in the incompressible liquid phase, but not where the solvent is in the compressible vapor phase. This reduces the chance of the solvent being heated by compression to a temperature where it, or any oil entrained in it, might degrade."

The claimed combination of thermally driving the vapor-phase solvent despite mechanically pumping the liquid-phase solvent is not suggested by any of the cited references. Specifically, Reid does not pump the solvent in any phase, thereby losing the speed and control advantages of a pump. In contrast, Low mechanically pumps the solvent in both liquid phase (using pump 16) and vapor phase (using compressor 23), thereby risking degrading his solvent and/or oil. In Oesch, the solvent is not thermally driven as claimed, much less thermally driven back to the reservoir from which it came as claimed. Therefore, claim 9 is patentable over the cited prior art.

Independent Claim 14

Claim 14, as amended, recites "an oil collection tank connected to both the distillation tank of the first system and the distillation tank of the second system for collecting the oil from both distillation tanks."

This is not disclosed or suggested by the references even in combination. That is because none of the references discloses two or more distillation systems, much less a single oil collection tank connected to both. Therefore, claim 14 is patentable over the cited prior art.

Independent Claim 17

Claim 17, as amended, recites "means for replacing the solvent in the system with a second solvent while the system remains closed to the atmosphere." This is not disclosed or suggested by the cited references even in combination. Therefore, claim 17 is patentable over the cited prior art.

Independent Claim 18

Claim 18 recites a thermal driving apparatus comprising a heat pump having a cold side configured to withdraw heat from the system at the reservoir and having a hot side configured to add the heat back to the system at the distillation tank.

This is not disclosed or suggested by the references even in combination. Therefore, claim 18 is patentable over the cited prior art.

Independent Claim 19

Claim 19 recites a purge tank having an inlet for receiving a solvent/contaminant mixture from the line, a cooling device for condensing the solvent but not the contaminant, a lower outlet for discharging the condensed solvent back into line, and an upper outlet for discharging the contaminant into the atmosphere.

This purge tank is not disclosed or suggested by the cited references even in combination. Therefore, claim 19 is patentable over the cited prior art.

Dependent Claims 10-13 and 15-16

The remaining claims are all dependent claims. They depend from base claims that are explained above to be patentable over the cited prior art. The limitations that the dependent claims add to the base claims distinguish them further from the prior art.

The application is therefore now in condition for allowance, and allowance is requested.

Respectfully submitted,



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